

REMARKS

Claims 1, 4-29 and 31-34 are pending in the application and stand rejected.

Claim Rejections – 35 U.S.C. § 103

The following obviousness rejections were asserted in the Office Action:

- (i) Claims 1, 6-29 and 31-34 stand rejected as being unpatentable over U.S. Patent Publication No. 2002/0130377 to Khare et al. in view of U.S. Patent Publication No. 2002/0094593 to Chiou et al, for the reasons set forth on pages 2-3 of the Office Action; and
- (ii) Claims 4-5 stand rejected as being unpatentable over Khare and Chiou and further in view of U.S. Patent No. 6,525,365 to Basceri et al.

Applicants respectfully traverse the rejections and contend that at the very least, the combination of Khare and Chiou is legally deficient to establish a *prima facie* case of obviousness against independent claims 1, 10, 16, 29 and 33. In particular, the combination does not disclose a process of forming a dielectric layer by *growing an oxynitride layer* and *annealing the oxynitride layer* as commonly recited in claims 1, 10, 16, 29 and 33, wherein annealing is performed under the conditions, as recited in the respective claims.

In particular, Applicants contend that Examiner's reliance on Khare is misplaced. Khare is directed to a method for forming a dielectric layer which comprises a two part step for forming an oxynitride layer including a first step of growing an initial oxynitride layer with thickness of "w" (using ion implantation and thermal oxidation), and a second step of using a remote plasma nitridation process (RPN) to grow the initial layer an additional thickness of "delta w". (See, e.g., Col. 2, paragraphs 18, 19 and 20). In other words, Khare discloses a two step process for growing an oxynitride layer, but does not include a subsequent "annealing" step for annealing the

oxynitride layer, as claimed.

Even assuming, *arguendo*, the plasma nitridation step (second growing step) of Khare is the same or similar to the claimed “annealing process”, Examiner’s reliance on the temperature of 550 degrees C of the plasma nitridation process (as disclosed by Khare) as being *prima facie* obvious for the claimed 400 degrees C anneal temperature, is wholly misplaced. Indeed, other than pure conjecture and speculation, the Examiner has offered no legally sufficient rational or technical reasoning to support his finding of obviousness “due to the expectation of similar results for similar ranges.”

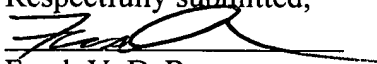
Most tellingly, as explained by Applicants on page 11 of their specification, for example, low temperature annealing according to the invention provides means for annealing defects from the oxynitride layer to achieve thin dielectric layers with decreased leakage currents. The Examiner has offered no evidence or basis-in-fact that plasma nitridation at temperatures of 550 degrees C or more provide the same results as the claimed annealing steps under condition of 400 degrees C. In this regard, if the Examiner has specific knowledge as to these disparate processes providing the same or similar results, Applicants request that Examiner provide a sworn affidavit (as is required under the MPEP) attesting to this and explaining the basis of Examiner’s knowledge in this regard.

Furthermore, Examiner’s reliance on Chiou to support the “Office Notice” of the claimed anneal time being “notoriously well-known”, is unsupported and legally improper. To begin, other than conclusory statements based on speculation and conjecture the Examiner has provided no reasonable basis or motivation for combining the teachings of Chiou with Khare. To begin, Chiou discloses a method of forming an ARC (antireflective coating) of SION wherein annealing

is performed to adjust the optical properties of the ARC layer (e.g., adjusting the extinction coefficient, k , of the dielectric ARC layer while holding the reflective index, n , at a constant value) (see, e.g., Abstract; Page 2, Para [0029]). In this regard, although Chiou generally discloses an anneal process, the annealing process of Chiou is fundamentally different and performed for different reasons than as contemplated by the claimed inventions. In fact, Chiou discloses that annealing in an O₂ atmosphere is more preferred for the particular results sought by Chiou (see, e.g., Col. 3, paragraph 32.), which actually teaches away from the claimed invention and demonstrates the different applications for the annealing.

In view of the above, it is clear that Examiner's reliance on the combination of Khare and Chiou is based on nothing more than impermissible hindsight reasoning and selective combining of processing steps from different references to derive the claimed inventions. As such, the obviousness rejections of claims 1, 10, 16, 29 and 33 are legally deficient and should be withdrawn. Moreover, to the extent that all remaining pending dependent claims are rejected as being obvious based, in part, on the combination of Chiou and Khare as applied to base claims 1, 10, 16, 29 and 33, the claim rejections do not support a *prima facie* case of obviousness at least for the same reasons given above. Accordingly, for the above reasons, withdrawal of the obviousness rejections is respectfully requested.

Respectfully submitted,


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